

Environmental Studies Program: Studies Development Plan | FY 2021–2022

Title	Using Outcomes from Marine Protected Area Implementation to Infer Potential Socioeconomic Consequences of Offshore Energy Development to Commercial Fisheries
Administered by	Pacific OCS Region
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Conducting Organization(s)	TBD
Total BOEM Cost	TBD
Performance Period	FY 2021–2023
Final Report Due	TBD
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PICOC Summary	
<i><u>Problem</u></i>	Most commercial fishery sectors will be excluded from offshore leases when development of floating wind or marine hydrokinetic energy occurs (creating de facto marine protected areas) and potential socioeconomic consequences from restricting access to a portion of fishing grounds are not well understood.
<i><u>Intervention</u></i>	Using outcomes from marine protected area implementation as analogs to offshore energy development, infer the potential socioeconomic consequences to the commercial fishing industry of reduced access to fishing grounds.
<i><u>Comparison</u></i>	Affected fisheries (from closures) with unaffected fisheries.
<i><u>Outcome</u></i>	Identification of a suite of socioeconomic indicators that can be used to estimate of the intensity of potential impacts to fishing industry from offshore energy, and a better understanding of how to mitigate these impacts.
<i><u>Context</u></i>	All Planning Areas in the Pacific Ocean and potentially some planning areas within the Atlantic Region.

BOEM Information Need(s): Most commercial fishery sectors will be excluded from OCS leases when development of floating wind or marine hydrokinetic energy occurs. The potential socioeconomic consequences of these closures represent a challenge to understand, predict and mitigate them due to a variety of factors, including the confidentiality of fishing data and the challenge of determining what an appropriate control might be in an experimental design. Enhancing the predictive capacity of managers to determine the scope of potential impacts from offshore energy to other users of the OCS will have widespread utility, and aid BOEM in identifying potential lease areas, informing NEPA documents, designing appropriate mitigation

measures, and communicating with stakeholders, including affected State governments and renewable energy task forces.

Background: Given the ubiquity of fishing activity on the OCS, any site selected for offshore energy development will overlap with areas currently used by one or more commercial fishing sectors. Although BOEM does not specifically prevent fishing within OCS leases, the marine infrastructure associated with offshore energy facilities often obstructs the ability of fishers to use certain gear or harvest methods (e.g., trawl, pot/trap, longline, nets, etc.), and this space-use conflict between industries creates, in effect, a marine protected area (MPA). For example, reef fishes that inhabit marine energy infrastructure offshore southern California show typical ecological responses to MPA protection, such as larger mean sizes and higher densities, when compared to unprotected areas (Schroeder and Love, 2004). Ashley et al. (2014) suggest that this MPA effect may also be present at offshore wind and wave energy installations.

Evidence exists that offshore energy structures may function as de facto MPAs in an ecological context. However, a full accounting of potential commercial fishing impacts from offshore structures must also include socioeconomic consequences and not just ecological ones, and, to date, studies focusing on this aspect have been in short supply. Datasets and opportunities exist to examine this question for various MPA implementation campaigns, particularly on the US West Coast. Even though there is the potential for such analyses, the short-term economic consequences of MPAs to fisheries have rarely been examined. Some scholars predicted that economic consequences would be roughly equivalent to the value of species harvested in the restricted area (e.g., Leeworthy and Wiley, 2003), but the accuracy of this prediction was never tested. Elsewhere scientists demonstrated no detectable effects of large closures to longline fisheries (Lynham et al., 2020). Understanding which factors may influence the direction and intensity of potential effects of offshore energy development to fisheries remains a high priority information need for BOEM.

Objectives: The objective of this study is to describe the detectable socioeconomic consequences experienced by the commercial fishing industry from implementation of marine protected areas, and to use this information to inform impacts analyses of prospective offshore energy projects.

Methods: Researchers will first identify socioeconomic indicators most likely to be useful to measure potential effects of prospective offshore wind energy developments in the Pacific, and include commercial, recreational and tribal sectors. Sources of data to determine relevant indicators will be existing literature, stakeholder outreach summaries, case studies of current OWFs and their outcomes, and analogs of offshore closures (e.g., military activities, MPAs, offshore conventional energy, offshore aquaculture, etc.) that have generated space-use conflicts.

When disentangling the causal effect of MPAs from other drivers in fishery socioeconomic outcomes, researchers will focus on relevant metrics (e.g., total landing revenues, catch per unit effort, number of trips, kilometers traveled, etc.) derived in the previous task, and establish proper treatment and control datasets. To estimate effects between these two groups,

investigators may employ difference-in-differences regressions (analogous to a Before-After-Control-Impact design commonly used in ecology) or a modified approach of event attribution that is used in climate change science (e.g., Knutson et al., 2017).

Specific Research Question(s):

1. Given available sources of data and analysis techniques, what socioeconomic indicators (e.g., number of trips, distance traveled, catch per unit effort, etc.) will best measure potential impacts to commercial, recreational and tribal fishing from offshore wind and wave energy development, and how do these indicators vary by region, sector, gear, and management framework?
2. Which ecological, cultural, and governance indicators enhance the interpretation of socioeconomic indicators identified in the first question?
3. What are the short-term socioeconomic consequences of MPA implementation to commercial fishing sectors?

Current Status: Proposed

Publications Completed: N/A

Affiliated WWW Sites: N/A

References:

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- Schroeder, D.M., and Love, M.S. 2002. Recreational fishing and marine fish populations in California. *California Cooperative Oceanic Fisheries Investigations Report* 43:182-190.